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Enclosure 1
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QUARTERLY REPORT

FOR JULY THROUGH SEPTEMBER 1993

OPERABLE UNIT #1
IM/IRA TREATMENT FACILITY

PREPARED BY

ENVIRONMENTAL RESTORATION
FACILITIES OPERATIONS MANAGEMENT

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1.0 INTRODUCTION

The Operable Unit No. 1 (OU-1) water treatment facility located in Building 891 is responsible for treating groundwater collected from the 881 Hillside area. The water is collected in a french drain located on the 881 hillside and pumped to the influent storage tanks located at Building 891 (see Figure 1). Next, the water is treated with an ultraviolet light/hydrogen peroxide system (for removal of volatile organic compounds) and a four-step ion exchange system (for removal of uranium, total dissolved solids (TDS), total suspended solids, cations, anions, and selected metals). After treatment, the water is stored in one of three effluent storage tanks until laboratory sample results verify that the water is acceptable for discharge into the South Interceptor Ditch (SID).

2.0 INFLUENT WATER CHARACTERISTICS

Influent water for the treatment facility comes from three different sources on the 881 Hillside. These sources include the 881 footing drain, the recovery well CW001 (located upgradient of the french drain), and groundwater intercepted by the french drain. Water from the footing drain flows by gravity into the french drain, mixes with groundwater, and collectively flows by gravity towards the french drain sump. Recovery well water is pumped directly into the french drain sump and mixed with the groundwater/footing drain water. The combined water is then pumped from the french drain sump into the treatment system influent holding tanks.

2.1 INFLUENT FLOW RATES

The recovery well pump operated for 53 minutes during the past quarter. It was estimated (using the pump curve) from this pumping time that approximately 265 gallons of water were pumped from the recovery well during the second quarter.

The 881 footing drain flowmeter was damaged by high flowrates in the early portion of the quarter and remained inoperable for several weeks. The meter was reinstalled with additional supports in the middle of the quarter. Equipment necessary to obtain data from the flowmeter was not yet available at the time of reinstallation. Therefore, after several weeks of data collection, the system ran out of memory and one week of data was lost. The system was then reprogrammed to produce less hardcopy output and extend the memory span. All problems with the flowmeter appear to be resolved and no further difficulties are expected. Average daily flowrates ranged from 1.9 GPM to 7.0 GPM at peak flowrates (see Figure 2). The total flow from 8/10/93 to 10/7/93 (one weeks' data was estimated) was approximately 339,000 gallons.

The influent flow totalizer was installed to assist in estimating the influent flow to the system. After collecting several days worth of data, it was found that the totalizer recorded only a fraction of the measured tank volume differential. Based on this data, the totalizer reading was established as unreliable source of information. Magnetic

flowmeters have been ordered and will be installed during the fourth quarter. These flowmeters will provide more accurate information on the influent flow to the system.

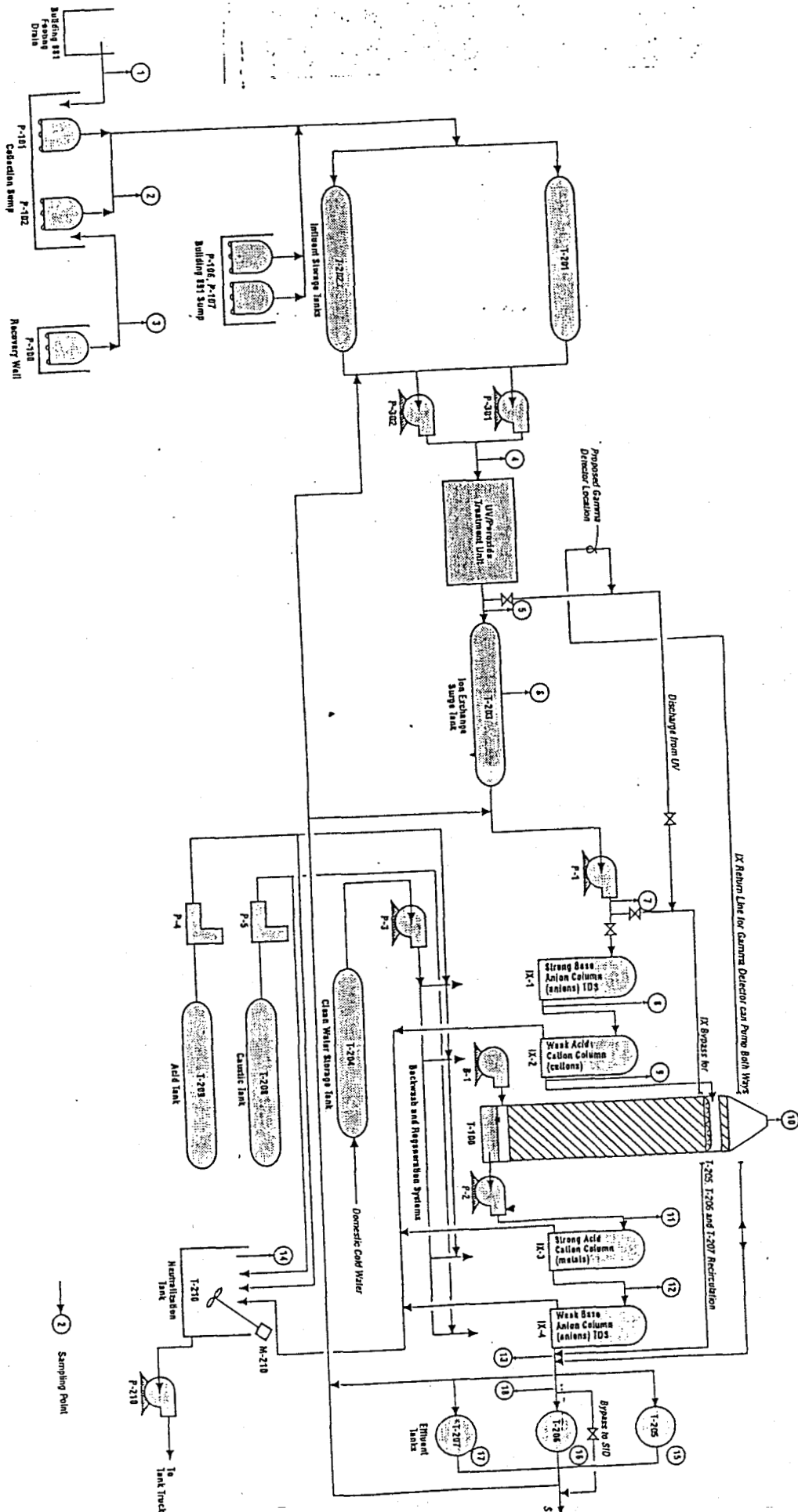


FIGURE 1
PROCESS FLOW DIAGRAM

FOOTING DRAIN FLOWRATES

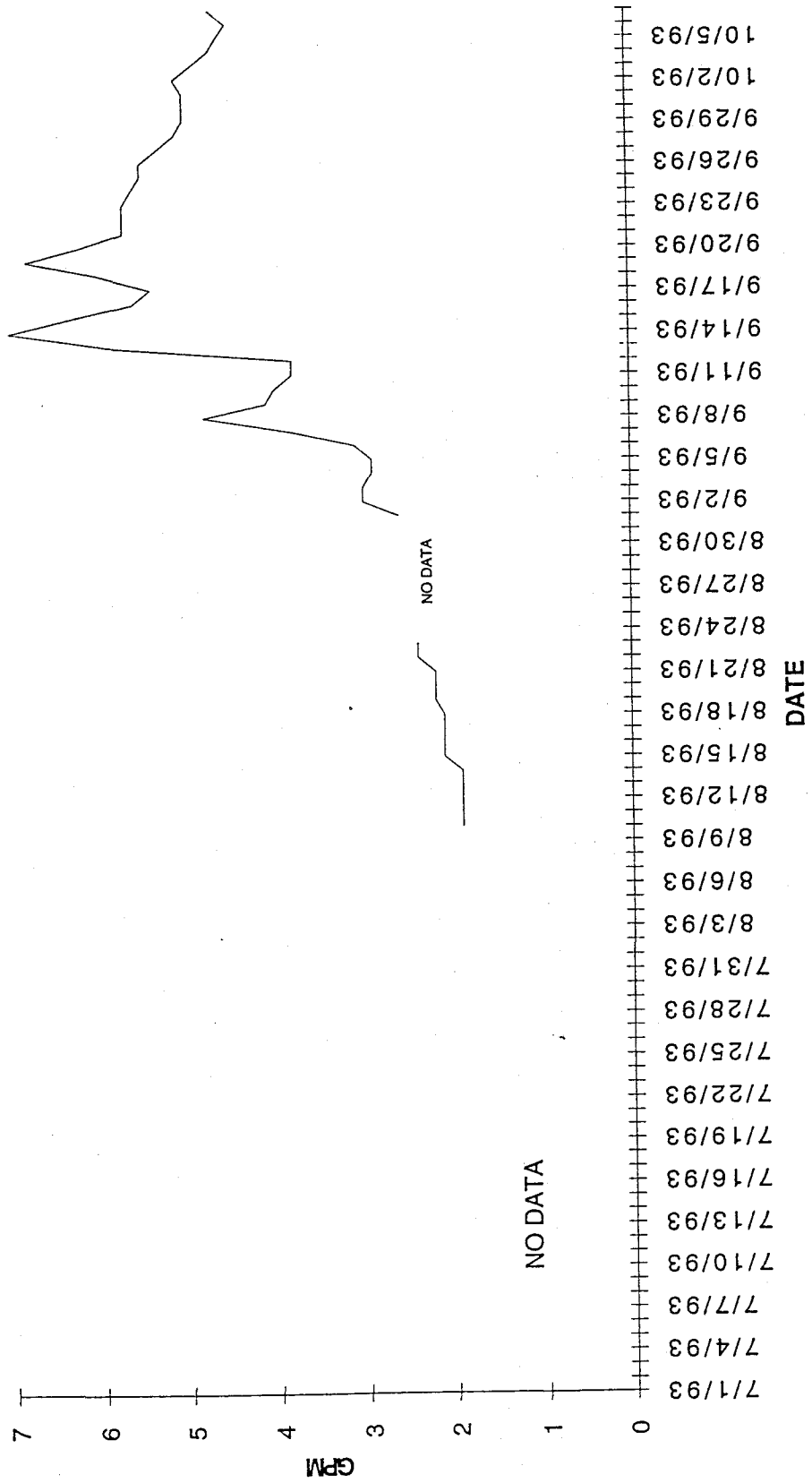


FIGURE 2

2.2 INFLUENT CONTAMINANTS

A summary of contaminants from each of the three hillside sample locations (881 footing drain, french drain sump, and the recovery well) for April through September 1993 is found in Figures 3, 4, and 5 respectively. Total Dissolved Solids (TDS) results are greater than the ARAR of 400 mg/l for all samples taken at these locations.

Currently, samples taken for metals at the hillside locations and within the treatment facility are for total metals. However, total metals results are not always useful when comparing the results to ARARs which have been developed as dissolved values. Therefore, samples taken during the next quarter will be for both dissolved and total metals. This data will then be used to determine the best course of action for future sample activities.

Only one additional parameter was above the ARAR at the footing drain location. Methylene Chloride was detected at 28 µg/l. However, a "B" qualifier was indicated on the results, indicating that the compound was also found in the laboratories' blank. Therefore, it is not certain that this compound was present in the sample.

Fewer samples are taken at the recovery well because there is not always enough water available to perform sampling. Three parameters (other than TDS) were detected above ARAR at this location. Total selenium was found at levels significantly above the ARAR for dissolved selenium in all four samples taken from April through September. One instance of gross alpha above the ARAR of 15 pci/l was reported at 20.1 pci/l. Trichloroethene is consistently detected at this location. Levels of 6 µg/l and 13 µg/l were detected over the reporting period. In addition, a third sample was estimated below the detection limit at 4 µg/l.

The quality of the footing drain water is the dominating factor when considering results from the french drain sump sampling. Methylene chloride was detected in a single sample over this period of sampling. A level of 29 µg/l was reported, but this compound was also found in the laboratories' blank (indicated by "B" qualifier).

3.0 FRENCH DRAIN MONITORING WELLS

The French Drain Performance Monitoring Plan (FDPMP) requires additional sample data for monitoring french drain performance. The FDPMP requires groundwater level measurements of designated french drain monitoring wells 10092, 10192, 10392, 10492, 10592, 10692, 10792, 10892, 10992, 11092, 39991, 45391, 4887, 35691, 31491, and 4787 (see Figure 6). Additionally, quarterly water quality sampling of the wells is required.

FOOTING DRAIN SAMPLE SUMMARY

VALUES IN UGL UNLESS SPECIFIED		FT10004RG	FT10031RG	FT10053RG	FT10074RG	FT10094RG	ARAR	# OF SAMPLES	# ABOVE ARAR	MIN VALUE	MAX VALUE
Methylene Chloride	2 BJ	28 B	U	U	U	U	5	5	1	U	28 B
Acetone	U	13 B	U	U	U	U	50	5	0	13 B	13 B
1,1 Dichloroethene	U	U	U	U	U	U	5	5	0	U	U
1,1 Dichloroethane	U	U	U	U	U	U	7	5	0	U	U
1,2 Dichloroethane	U	U	U	U	U	U	5	5	0	U	U
1,1,1 Trichloroethane	U	U	U	U	U	U	5	5	0	U	U
Carbon Tetrachloride	U	U	U	U	U	U	200	5	0	U	U
1,1,2 Trichloroethane	U	U	U	U	U	U	5	5	0	U	U
Trichloroethane	U	U	U	U	U	U	5	5	0	U	4J
Tetrachloroethane	4 J	U	U	U	U	U	5	5	0	U	U
Toluene	U	U	U	U	U	U	2000	5	0	U	U
Aluminum	U	96.6 B	31.7 B	22.7 B	56.1 B	5000	5000	5	0	U	96.6 B
Antimony	U	U	U	19.3 B	U	60	60	5	0	U	19.3 B
Arsenic	U	U	U	U	U	U	50	5	0	U	U
Barium	139 B	154 B	158 B	156 B	164 B	1000	1000	5	0	139 B	164 B
Beryllium	U	.47 B	U	U	1.2 B	100	100	5	0	U	1.2 B
Cadmium	U	U	U	U	U	10	10	5	0	U	U
Chromium	U	U	U	U	U	50	50	5	0	U	U
Copper	U	U	U	2.6 B	U	200	200	5	0	U	2.6 B
Iron	19.2 B	28.8 B	31.5 B	U	9.6 B	300	300	5	0	U	31.5 B
Lead	U	2.5 B	U	U	U	50	50	5	0	U	2.5 B
Lithium	26.0 B	16.0 B	14.8 B	17.5 B	13.8 B	2500	2500	5	0	13.8 B	26.0 B
Manganese	U	2.7 B	U	1.3B	U	50	50	5	0	U	2.7 B
Mercury	U	U	U	U	U	2	2	5	0	U	U
Molybdenum	U	U	U	U	U	100	100	5	0	U	U
Nickel	U	U	U	U	U	200	200	5	0	U	U
Selenium	1.6 B	U	3.8 B	3.6 B	2.4 B	10	10	5	0	U	3.8 B
Silver	U	U	U	U	U	50	50	5	0	U	U
Thallium	U	U	U	U	U	10	10	5	0	U	U
Vandium	2.8 B	7.2 B	U	U	U	100	100	5	0	U	7.2 B
Zinc	34.3	52	48.9	29.2	37.3	2000	2000	5	0	29.2	52

FIGURE 3

FOOTING DRAIN SAMPLE SUMMARY

	FT10004RG	FT10032RG	FT10053RG	FT10074RG	FT10094RG	ARAR	# OF SAMPLES	# ABOVE ARAR	MIN VALUE	MAX VALUE
Gross Alpha	7.44 pci/l	ANC	5.393 pci/l	5.131 pci/l	ANC	15 pci/l	3	0	5.131 pci/l	7.44 pci/l
Error	2.7		2.377	2.311					2.311	2.7
Gross Beta	5.88 pci/l	ANC	4.868 pci/l	4.213 pci/l	ANC	50 pci/l	3	0	4.213 pci/l	5.88 pci/l
Error	2.46		1.308	1.343					1.343	2.46
Uranium (Total)	NS	ANC	7.007 pci/l	7.541 pci/l	ANC	40 pci/l	2	0	7.007 pci/l	7.541 pci/l
Error			0.753	1.463					0.0753	1.463
Strontium	0.344 pci/l	ANC	0.109 pci/l	.177 pci/l	ANC	8 pci/l	3	0	.109 pci/l	.344 pci/l
Error	0.417		0.143	0.158					0.143	0.417
Plutonium	(-0.00152) pci/l	ANC	0.003 pci/l	.002 pci/l	ANC	15 pci/l	3	0	(-0.00152) pci/l	.003 pci/l
Error	0.00137		0.003	0.009					0.00137	0.003
Americium	0.00333 pci/l	ANC	0.022 pci/l	.001 pci/l	ANC	4 pci/l	3	0	.001 pci/l	.022 pci/l
Error	0.00457		0.007	0.002						
Tritium	55.9 pci/l	ANC	79.650 pci/l	52.96 pci/l	ANC	20000 pci/l	3	0	52.96 pci/l	79.650 pci/l
Error	243		132.378							
	FT10004RG	FT10031RG	FT10053RG	FT10074RG	FT10094RG	ARAR	SAMPLES	# ABOVE ARAR	MIN VALUE	MAX VALUE
Total Dissolved Solids	526 mg/l	589 mg/l	510 mg/l	470 mg/l	500 mg/l	400 mg/l	5	5	470 mg/l	589 mg/l
Chloride	102 mg/l	102 mg/l	120 mg/l	110 mg/l	110 mg/l	250 mg/l	5	0	102 mg/l	120 mg/l
Nitrate/Nitrate	6.84 mg/l	7.6 mg/l	6.6 mg/l	6.7 mg/l	6.3 mg/l	10 mg/l	5	0	6.3 mg/l	7.6 mg/l
Sulfate	37.0 mg/l	38.3 mg/l	44 mg/l	47 mg/l	45 mg/l	250 mg/l	5	0	37.0 mg/l	47.0 mg/l
J-VALUE ESTIMATED BELOW DETECTION LIMIT										
U-PARAMETER NOT DETECTED										
B (VOLATILES)-PARAMETER ALSO FOUND IN LABORATORY BLANK										
B (METALS)-LESS THAN METHOD DETECTION LIMIT BUT GREATER THAN OR EQUAL TO INSTRUMENT DETECTION LIMIT										

FIGURE 3

COL GALLERY SAMPLE SUMMARY

VALUES IN UGL UNLESS SPECIFIED		FT10035RG	FT10056RG	FT10075RG	FT10096RG	ARAR	# OF SAMPLES	# ABOVE ARAR	MIN VALUE	MAX VALUE
Methylene Chloride	29 B	U	U	U	U	5	4	1	U	29 B
Acetone	7 BJ	U	U	U	U	50	4	0	U	7 BJ
1,1 Dichloroethene	U	U	U	U	U	5	4	0	U	U
1,1 Dichloroethane	U	U	U	U	U	7	4	0	U	U
1,2 Dichloroethane	U	U	U	U	U	5	4	0	U	U
1,1,1 Trichloroethane	U	U	U	U	U	5	4	0	U	U
Carbon Tetrachloride	U	U	U	U	U	200	4	0	U	U
1,1,2 Trichloroethane	U	U	U	U	U	5	4	0	U	U
Trichloroethene	U	U	U	U	U	5	4	0	U	2 J
Tetrachloroethene	2 J	1 J	U	U	U	5	4	0	U	U
Toluene	U	U	U	U	U	2000	4	0	U	U
Toluene	47.4 B	U	39.4 B	32.2 B	ANC	5000	3	0	32.2 B	47.4 B
Aluminum	U	U	U	U	ANC	60	3	0	U	U
Antimony	U	U	U	U	ANC	50	3	0	2.4 B	6.7 B
Arsenic	3.3 B	2.4 B	165 B	6.7 B	ANC	1000	3	0	165 B	189 B
Barium	189 B	U	U	168 B	ANC	100	3	0	U	U
Beryllium	U	U	U	U	ANC	10	3	0	U	U
Cadmium	U	U	U	U	ANC	50	3	0	U	U
Chromium	U	U	U	U	ANC	200	3	0	U	3.7 B
Copper	U	U	U	3.7 B	ANC	300	3	0	U	31.0 B
Iron	U	13.9 B	U	31.0 B	ANC	50	3	0	1.0 B	8.4
Lead	8.4	1.0 B	15.6 B	1.5 B	ANC	2500	3	0	15	19.5 B
Lithium	15	U	U	19.5 B	ANC	50	3	0	U	2.2 B
Manganese	2.2 B	U	U	1.1 B	ANC	2	3	0	U	U
Mercury	U	U	U	U	ANC	100	3	0	U	U
Molybdenum	U	U	U	U	ANC	200	3	0	U	U
Nickel	U	U	U	U	ANC	10	3	0	7.7	8.5 B
Selenium	8.5 B	7.9 B	U	7.7	ANC	50	3	0	U	U
Silver	U	U	U	U	ANC	10	3	0	U	U
Thallium	U	U	U	U	ANC	100	3	0	U	4.7 B
Vanadium	4.7 B	U	U	U	ANC	2000	3	0	68.1	137
Zinc	70.3	68.1	137	137	ANC	2000	3	0	68.1	137

FIGURE 4

COL GALLERY SAMPLE SUMMARY

	FT10036RG	FT10056RG	FT10075RG	FT10096RG	APAR	# OF SAMPLES	# ABOVE ARAR	MIN VALUE	MAX VALUE
Gross Alpha Error	ANC	4.106 pci/l 2.195	1.697 pci/l 1.377	ANC	15 pci/l	2	0	1.697 pci/l 1.377	4.106 pci/l 2.195
Gross Beta Error	ANC	3.849 pci/l 1.355	3.517 pci/l 1.302	ANC	50 pci/l	2	0	3.517 pci/l 1.302	3.849 pci/l 1.355
Uranium (Total) Error	ANC	7.734 pci/l 0.847	8.198 pci/l 1.464	ANC	40 pci/l	2	0	7.734 pci/l 0.847	8.198 pci/l 1.464
Strontium Error	ANC	(-.011) pci/l 0.109	0.027 pci/l 0.104	ANC	8 pci/l	2	0	(-.011) pci/l 0.109	0.027 pci/l 0.104
Plutonium Error	ANC	.453 pci/l 0.071	(-.003) pci/l 0.004	ANC	15 pci/l	2	0	(-.003) pci/l 0.004	.453 pci/l 0.071
Americium Error	ANC	(-.001) pci/l 0.002	.001 pci/l 0.007	ANC	4 pci/l	2	0	(-.001) pci/l 0.002	.001 pci/l 0.007
Tritium Error	ANC	137.7 pci/l 135.495	35.660 pci/l 139.807	ANC	20000 pci/l	2	0	35.660 pci/l 139.807	137.7 pci/l 135.495
	FT10035RG	FT10056RG	FT10075RG	FT10096RG	APAR	# OF SAMPLES	# ABOVE ARAR	MIN VALUE	MAX VALUE
Total Dissolved Solids	575 mg/l	530 mg/l	520 mg/l	510 mg/l	400 mg/l	4	4	510 mg/l	575 mg/l
Chloride	102 mg/l	110 mg/l	110 mg/l	110 mg/l	250 mg/l	4	0	102 mg/l	110 mg/l
Nitrate/Nitrate	7.1 mg/l	6.2 mg/l	6.2 mg/l	5.8 mg/l	10 mg/l	4	0	5.8 mg/l	7.1 mg/l
Sulfate	47.8 mg/l	52 mg/l	62 mg/l	56 mg/l	250 mg/l	4	0	47.8 mg/l	62 mg/l
ANC-ANALYSIS NO COMPLETE					J-VALUE ESTIMATED BELOW DETECTION LIMIT				
B (VOLATILES)-PARAMETER ALSO FOUND IN LABORATORY BLANK					U-PARAMETER NOT DETECTED				
B (METALS)-LESS THAN METHOD DETECTION LIMIT BUT GREATER THAN OR EQUAL TO INSTRUMENT DETECTION LIMIT									

FIGURE 4

COLLECTION WELL SAMPLE SUMMARY

VALUES IN UG/L UNLESS SPECIFIED	FT1005RG		FT10033RG		FT10055RG		FT10076RG		AFAR		# OF SAMPLES		# ABOVE ARAR		MIN VALUE		MAX VALUE	
Methylene Chloride	U		ANC		U		U		5		3		0		U		U	
Acetone	U		ANC		U		U		50		3		0		U		U	
1,1 Dichloroethene	U		ANC		U		U		5		3		0		U		U	
1,1 Dichloroethane	U		ANC		U		U		7		3		0		U		U	
1,2 Dichloroethane	U		ANC		U		U		5		3		0		U		U	
1,1,1 Trichloroethane	U		ANC		U		U		5		3		0		U		U	
Carbon Tetrachloride	U		ANC		U		U		200		3		0		U		U	
1,1,2 Trichloroethane	U		ANC		U		U		5		3		0		U		U	
Trichloroethene	6		ANC		4J		13		5		3		2		U		13	
Tetrachloroethene	U		ANC		U		2J		5		3		0		U		2J	
Toluene	U		ANC		U		U		2000		3		0		U		U	
Aluminum	U		U		29.3 B		49.2 B		5000		4		0		U		49.2 B	
Antimony	U		U		U		U		60		4		0		U		U	
Arsenic	1.4 B		2.3 B		1.6 B		U		50		4		0		U		2.3 B	
Barium	48.8 B		52.8 B		50.5 B		53.5 B		1000		4		0		48.8 B		53.5 B	
Beryllium	U		U		U		U		100		4		0		U		U	
Cadmium	U		U		U		U		10		4		0		U		U	
Chromium	U		4.2 B		U		U		50		4		0		U		4.2 B	
Copper	U		U		2.5 B		3.4 B		200		4		0		U		3.4 B	
Iron	U		51.5 B		170		23.5 B		300		4		0		U		170	
Lead	1.7 B		2.3 B		U		U		50		4		0		U		2.3 B	
Lithium	25.0 B		28.4 B		23.7 B		26.7 B		2500		4		0		23.7 B		28.4 B	
Manganese	U		U		U		1.3 B		50		4		0		U		1.3 B	
Mercury	U		U		U		U		2		4		0		U		U	
Molybdenum	U		U		U		U		100		4		0		U		U	
Nickel	U		U		U		U		200		4		0		U		U	
Selenium	572		470		542		635		10		4		4		470		635	
Silver	U		U		U		3.8 B		50		4		0		U		3.8 B	
Thallium	U		U		U		U		10		4		0		U		U	
Vandium	17.0 B		21.6 B		U		U		100		4		0		U		21.6 B	
Zinc	37.5		55.9		71.5		73.3		2000		4		0		37.5		73.3	

FIGURE 5

COLLECTION WELL SAMPLE SUMMARY

	FT1005RG	FT10034RG	FT10055RG	FT10076RG	APAR	# OF SAMPLES	# ABOVE APAR	MIN VALUE	MAX VALUE
Gross Alpha	20.1 pci/l	ANC	5.393 pci/l	9.628 pci/l	15 pci/l	3	1	5.393	20.1
Error	6.1		2.377	2.652				2.377	6.1
Gross Beta	6.88 pci/l	ANC	4.868 pci/l	0.867 pci/l	50 pci/l	3	0	0.867	6.88
Error	2.24		1.308	1.124				1.124	2.24
Uranium (Total)	NS	ANC	7.007 pci/l	17.978 pci/l	40 pci/l	2	0	7.007	17.978
Error			0.753	2.557				0.753	2.557
Strontium	0.0657 pci/l	ANC	0.109 pci/l	0.046 pci/l	8 pci/l	3	0	0.046	0.109
Error	0.326		0.143	0.121				0.121	0.143
Plutonium	0.00178 pci/l	ANC	0.003 pci/l	(-0.001) pci/l	15 pci/l	3	0	(-0.001)	0.003
Error	0.00347		0.003	0.003				0.003	0.003
Americium	0.00406 pci/l	ANC	0.022 pci/l	0 pci/l	4 pci/l	3	0	0	0.022
Error	0.00403		0.007	0.001				0.001	0.007
Tritium	(-122) pci/l	ANC	79.65 pci/l	49.42 pci/l	20000 pci/l	3	0	(-122)	79.65
Error	234		132.378	139.062				234	132.378
						#	# ABOVE	MIN	MAX
					APAR	SAMPLES	APAR	VALUE	VALUE
Total Dissolved Solids	FT10005RG	FT10033RG	FT10055RG	FT10076RG	APAR	SAMPLES	APAR	VALUE	VALUE
	815 mg/l	771 mg/l	730 mg/l	830 mg/l	400 mg/l	4	4	730 mg/l	830 mg/l
Chloride	177 mg/l	175 mg/l	180 mg/l	210 mg/l	250 mg/l	4	0	175 mg/l	210 mg/l
Nitrate/Nitrate	5.76 mg/l	6.0 mg/l	4.7 mg/l	6.1 mg/l	10 mg/l	4	0	4.7 mg/l	6.1 mg/l
Sulfate	213 mg/l	215 mg/l	230 mg/l	240 mg/l	250 mg/l	4	0	213 mg/l	240 mg/l
ANC-ANALYSIS NO COMPLETE					J-VALUE ESTIMATED BELOW DETECTION LIMIT				
B (VOLATILES)-PARAMETER ALSO FOUND IN LABORATORY BLANK					U-PARAMETER NOT DETECTED				
B (METALS)-LESS THAN METHOD DETECTION LIMIT BUT GREATER THAN OR EQUAL TO INSTRUMENT DETECTION LIMIT									

FIGURE 5

3.1 WATER LEVELS

Groundwater level measurements were taken throughout the duration of the second quarter. A summary table of the measurements taken throughout the quarter is found in Figure 7.

3.2 MONITORING WELL CONTAMINANTS

Sampling of the hillside monitoring wells continues as a performance check on the french drain. The following data summarizes contaminants detected above ARAR that were not reported in the April through June Quarterly Report (No data from current quarter available):

<u>WELL #</u>	<u>DATE</u>	<u>PARAMETER</u>	<u>RESULT</u>	<u>ARAR</u>
10492	6/11/93	Gross Alpha	26 pci/l	15 pci/l
	6/11/93	Selenium	682 µg/l	10 µg/l
	6/11/93	Sulfate	360 mg/l	250 mg/l
	6/11/93	TDS	1100 mg/l	400 mg/l
10592	6/17/93	Sulfate	340 mg/l	250 mg/l
	6/17/93	TDS	1200 mg/l	400 mg/l
	6/17/93	Selenium*	164 µg/l	10 µg/l
10692	6/11/93	Gross Alpha	18 pci/l	15 pci/l
	6/11/93	Sulfate	440 mg/l	250 mg/l
	6/11/93	TDS	1200 mg/l	400 mg/l
10992	6/11/93	Nitrate/Nitrite	30 mg/l	10 mg/l
31491	4/30/93	Chloride	260 mg/l	250 mg/l
	4/30/93	Sulfate	2300 mg/l	250 mg/l
	4/30/93	TDS	2100 mg/l	400 mg/l

* Spiked recovery not within control limits for this parameter

4.0 800 AREA SURFACE WATER MONITORING STATIONS

Surface water flowmeter data for the 800 parking lot area is shown in Figure 8. Flows represented in the figure are in millions of gallons per day. One sample was taken at the end of September and is currently being processed at the 881 labs. Results of this sample will be reported in the October through December 1993 Report.

5.0 TREATMENT FACILITY PERFORMANCE

The treatment system performance is measured by various criteria. Quantity of water treated, contamination destruction or removal efficiency, waste generation, operating costs, chemical usage, and system reliability.

WEE. WATER LEVELS

	10092	10192	10292	10392	10492	10592	10692	10792	10892	10992	11092	31491	35691	45391	4787	4887
Top case																
elevat.	5900.47	5924.3	5925.46	5932.05	5932.81	5937.93	5943.6	5917.1	5929.2	5898.56	5895.31	5905.03	5941.36	5894.24	5884.64	5911.41
Top case																
depth	23.08	21.08	26.28	29.07	34.4	28.19	23.44	26.26	26.28	33.67	23.06	23.66	30.46	23.49	9.8	12.37
7/2/93	DRY	DRY	DRY	DRY	5902.31	5912.71	5938.55	5893.21	DRY	5866.56	5901.94	5883.58	5923.47	5870.65	5875.96	5902.26
7/9/93	DRY	DRY	DRY	DRY	5902.21	5913.51	5938.28	5893.42	DRY	5866.78	5902.02			5871.32		
7/15/93	DRY	DRY	DRY	DRY	5902.23	5914.05	5938.18	5893.54	DRY	5866.96	5902.1			5871.53		
7/23/93	DRY	DRY	DRY	DRY	5902.29	5912.11	5937.94	5892.44	DRY	5866.08	5901.74			5869.96		
7/30/93	DRY	DRY	DRY	DRY	5902.22	5912.77	5937.59	5892.84	DRY	5866.39	5901.86			5870.66		
8/6/93	DRY	DRY	DRY	DRY	5902.28	5913.43	5937.51	5893.11	DRY	5866.64	5901.96			5870.92		
8/13/93	DRY	DRY	DRY	DRY	5902.27	5913.95	5937.31	5893.25	DRY	5866.86	5902.06			5871.27		
8/18/93												5883.15				
8/20/93	DRY	DRY	DRY	DRY	5902.25	5914.47	5937.02	5893.36	DRY	5867.1	5902.2			5871.48		
8/24/93															5875.02	
8/27/93	DRY	DRY	DRY	DRY	5902.21	5914.88	5936.76	5893.42	DRY	5867.28	5902.26			5871.6		
9/3/93	DRY	DRY	DRY	DRY	5902.26	5915.24	5936.63	5893.47	DRY	5867.48	5902.39			5871.7		
9/7/93															DRY	
9/10/93	DRY	DRY	DRY	DRY	5902.26	5915.57	5936.45	5893.48	DRY	5867.65	5902.52			5871.89		
9/15/93													5923.06	5871.89		
9/17/93	DRY	DRY	DRY	DRY	5902.31	5915.98	5936.35	5893.52	DRY	5862.47	5902.66					
9/20/93								5893.5			5902.7					
9/22/93										5867.99				5871.9		
9/23/93					5902.31	5916.43	5936									
9/24/93	DRY	DRY	DRY	DRY					DRY							

LEVELS IN FEET ABOVE SEA LEVEL EXCEPT DEPTH WHICH IS RELATIVE

FIGURE 7

July - September 1993 - Flow Totals (Day) - Surface Water Division: GS19, GS20, GS21, & Precipitation

Day	GS19 July	GS19 August	GS19 September	GS20 July	GS20 August	GS20 September	GS21 July	GS21 August	GS21 September	Precipitation July Day/TOT	Precipitation August Day/TOT	Precipitation Sep. Day/TOT
1	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
2	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.190
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0010	0.0000	0.0000	0.000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0000	0.0030	0.0000	0.0500	0.000
5	0.0000	0.0000	0.0010	0.0000	0.0020	0.0000	0.0030	0.0005	0.0030	0.0000	0.1500	0.100
6	0.0000	0.0000	0.0010	0.0000	0.0020	0.0000	0.0040	0.0005	0.0030	0.0000	0.1100	0.040
7	0.0000	0.0000	0.0030	0.0000	0.0000	0.0020	0.0030	0.0000	0.0060	0.0000	0.0000	0.370
8	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060	0.0000	0.0000	0.010
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0000	0.0000	0.000
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0070	0.0000	0.0000	0.000
11	0.0015	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0000	0.0040	0.0600	0.0000	0.000
12	0.0000	0.0000	0.0000	0.0030	0.0000	0.0000	0.0000	0.0000	0.0050	0.0900	0.0100	0.000
13	0.0000	0.0000	0.0070	0.0020	0.0000	0.0030	0.0000	0.0000	0.0180	0.0500	0.0000	0.270
14	0.0020	0.0000	0.0050	0.0090	0.0000	0.0000	0.0000	0.0000	Cal	0.2700	0.0000	0.400
15	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060	0.0000	0.0000	0.070
16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0000	0.140
17	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.020
18	0.0000	0.0000	0.0040	0.0000	0.0000	0.0020	0.0000	0.0000	0.0000	0.0000	0.0000	0.290
19	0.0000	0.0000	0.0020	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	0.0000	0.000
20	0.0000	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	0.000
21	0.0015	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	0.0400	0.000
22	0.0000	0.0000	0.0010	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.010
23	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.010
24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	0.000
26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	0.000
27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
30	0.0010	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	0.0000	0.000
31	0.0000	0.0000	0.0000	0.0020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
Totals	0.0060	0.0010	0.0290	0.0330	0.0040	0.0070	0.0170	0.0010	0.0690	0.5000	0.3900	1.920

Note: Totals are in MGD
Precipitation Totals = Inches

AVG. = Daily Average / Hour
TOT = Daily Totals

FIGURE 8

5.1 QUANTITY OF WATER TREATED

Approximately 166,000 gallons of groundwater was treated at the treatment facility during the past quarter. In addition, 82,000 gallons of water from T-205 was retreated through the ion exchange system in order to remove dissolved iron. Approximately 100,000 gallons of treated effluent (see also Section 6 on Environmental Compliance) was released to the South Interceptor Ditch. Approximately 1,600,000 gallons of groundwater has been processed through the system to date.

5.2 WATER FROM OTHER SOURCES

An estimated 2,500 gallons of decontamination pad water was treated during the quarter. The decontamination pad water required treatment at Building 891 due to low level (<10 ppb) volatile organics. However, when the water was processed for treatment, sample results indicated no presence of volatile organics in the water.

5.3 CONTAMINATION DESTRUCTION/REMOVAL EFFICIENCY

A comparison of the UV/peroxide influent and effluent samples was presented in the April through June 1993 Quarterly Report. Additional information was not available to evaluate the UV/Peroxide unit performance since the last quarterly report.

Influent and effluent sample results that were taken in April, June, and July across Ion Exchange Column #1 are shown in Figure 9. Raw data shows a reduction in most all radionuclides.

Uranium

5.4 CHEMICAL USAGE

A total of 807 gallons of hydrochloric acid and 408 gallons of sodium hydroxide were used for regeneration and neutralization activities. Approximately 10 gallons of hydrogen peroxide was used for the UV/Peroxide destruction unit.

5.5 POWER USAGE

An IWCP has been initiated to perform a load study on the 891 treatment facility. This will provide information on the power requirements of certain components in the system.

5.6 WASTE GENERATION

Waste generated at the treatment facility includes sock filters and neutralized regenerant water. Less than one 55 gallon drum of sock filters has been generated in 18 months of operation. It is currently expected that the sediment from the sock filters can be drummed, and the sock filters surveyed and taken to the landfill. This action would reduce the amount of drummed waste by at least 90%. Eight tanker truck loads of neutralized regenerant water from Tank T-210 (30,000 gallons) was sent to the 374 evaporator.

RAD REMOVAL ACROSS IX COLUMN #1

UR ANVUM

Date	Parameter	Inf. Result	Inf. error	Eff. Result	Eff. error
4/29/93	Gross alpha	6.199	2.082	0.212	1.178
	Gross Beta	4.351	1.022	3.736	0.906
	Ur-233,234				
	Ur-235				
	Ur-238				
	Sr-89, 90	0.071	0.157	0.02	0.19
	Pu-239, 240	(-.002)	0.002	0.003	0.005
	Am-241	0.002	0.005	(-.001)	0.004
	Cs-137	(-.134)	0.108	(-.085)	0.097
	Tritium	127	152.723	54.08	148.392
6/11/93	Gross alpha	3.607	1.754	(-1.155)	1.57
	Gross Beta	4.096	0.814	3.455	0.757
	Ur-233,234				
	Ur-235				
	Ur-238				
	Sr-89, 90	0.103	0.199	0.147	0.202
	Pu-239, 240	(-.017)	0.033	0.023	0.046
	Am-241	0.001	0.004	0.001	0.003
	Cs-137	(-.036)	0.153	0.043	0.117
	Tritium	31.97	146.216	177	155.31
7/7/93	Gross alpha	4.4	2.1	0.16	1.4
	Gross Beta	2.3	1.5	1.5	1.2
	Ur-233,234	4.3	0.78	(-.047)	0.0936
	Ur-235	0.11	0.11	0	0.056
	Ur-238	3.3	0.65	0.023	0.047
	Sr-89, 90	(-.013)	0.15	0.076	0.11
	Pu-239, 240	0.002	0.003	(-.001)	0.004
	Am-241	0.002	0.004	0	0.003
	Cs-137	(-.11)	0.1	0.007	0.099
	Tritium	140	150	250	160
VALUES IN PCI/L					

FIGURE 9

5.7 OPERATING COSTS

Subcontracted operating costs for this quarter totaled approximately \$40,000. These costs include chemical purchases, spare parts, labor, and document preparation. Some additional scope was added to the contract in order to increase upper management oversight and add a part-time individual devoted to sampling activities.

5.8 MAINTENANCE

The french drain flow totalizer was reinstalled after repair into the collection gallery discharge line. However, after several attempts to verify the accuracy of the totalizer, it was found that unit was again not functioning correctly. Flowmeters throughout the system have proven to be unreliable. Calculations of tank dropout and comparison to the UV/Peroxide flowmeter show a 25% discrepancy. Magnetic flow meters have been ordered and will be installed in order to provide an accurate measure of the influent feed into the system.

The heater contact on one phase of Pump P-102 starter (french drain collection gallery sump pump) was tripping out the pump. It is uncertain what the exact cause of the problem was, however EG&G maintenance was able to bring the pump back into operational status.

The compressor and transducer that relay french drain water level information to the building logic controller were replaced due to failure.

The pump P-210 impeller seized up around the shaft and was replaced.

Some problems with the lightning strike in July still remain an issue. Parts are on order but have not yet been received in order to correct the situation. In addition, some troubleshooting on the building logic controller is periodically required.

Problems with the pH sensors in the ion exchange system that were experienced last quarter seem to be resolved. All pH sensors are now functional. Modifications to the system are planned in order to make it easier for calibration.

6.0 TREATMENT FACILITY SAMPLING

Water samples are taken at OU-1 to characterize the influent groundwater, assure that neutralization water from regeneration of the ion exchange system is acceptable for the 374 evaporator, monitor the ion exchange resin performance, and to verify that all discharge standards are met. Water that is sent to the 374 evaporator is analyzed for pH and gross alpha in the 881 general labs. Sampling results for the three hillside locations and the radionuclide removal across ion exchange column #1 are presented in Figures 3,4,5, and 9.

7.0 ENVIRONMENTAL COMPLIANCE

On August 26, 1993 approximately 50,000-60,000 gallons of treated effluent water was released from effluent tank T-207. This was an unplanned release due to the fact that the samples previously taken had not yet been analyzed and the data verified at the time for the discharge. The circumstances of the release involved a discharge valve that was inadvertently left open on T-207 while T-206 was discharging.

As a corrective action, the treatment facility was shut down for a one week period in order to prepare operating procedures for critical facility operations. The Building 891 operations subcontractor satisfactorily completed draft Standard Operating Procedures (SOPs) for basic operations of the treatment facility during the one week period. A shift order was issued to allow the subcontractor to work under the draft SOPs while the final approval process is underway.

Results of the released waters indicate that all parameters were below ARAR with the exception of iron. The total iron content was found to be .357 mg/l and the dissolved iron content was .34 mg/l. The ARAR for iron is .3 mg/l. The remaining water was retreated and placed into another tank to be sampled before discharge.

8.0 REPORTS AND CORRESPONDENCE

The Site Specific Health and Safety Plan was revised and approved on September 30, 1993.

The subcontractor satisfactorily completed draft SOP's for specific operations at the treatment facility. The approval process is expected to take several months.

The case is still being developed to discontinue the collection of the 881 footing drain. A presentation to the DOE will be prepared when all documentation is in place.

9.0 ANTICIPATED OPERATIONS FOR NEXT QUARTER

Normal operations will continue through the end of the calendar year. Some periods of high flows should be experienced due to winter weather conditions. Some overtime may be necessary to keep up with increased flows.

It is anticipated that the installation of the gas chromatograph will begin in Mid-November. Several items of concern are still being discussed with the vendor in order to eliminate problems when the equipment is ready for installation.

10.0 SUMMARY/CONCLUSIONS

The volume of water treated this past quarter is significantly lower than that of last quarter. It is expected that the volume of water treated during this quarter will be significantly greater due to winter weather conditions. Overall, 166,000 gallons of groundwater was treated this past quarter, and approximately 100,000 gallons of treated effluent was released.

The unanticipated release of 50,000-60,000 gallons of water resulted in significant changes in operations. Operation specific procedures were developed and more checks have been put into the system to avoid future difficulties.

The installation of the gas chromatograph in November/December will bring significant real-time analysis capabilities to the treatment facility. Several months of systems testing will be needed to verify the effectiveness of the unit.

A decision in favor of the discontinuation of the 881 footing drain would significantly affect operations. A significant reduction to current and outyear funding would be encountered should this source be eliminated.

